

What is claimed is:

1. A transceiver front-end for use in a portable communication device, the communication device having a first antenna and a second antenna electrically separated
5 from the first antenna, the transceiver front-end having a plurality of signal paths for conveying communication signals in the communication device, including at least a first signal path for conveying a communication signal in a first frequency band, and a second signal path for conveying a communication signal in a second frequency band, which is at least partially overlapped with the first frequency band, said front-end comprising:
10 a first feed point, operatively connected to the first antenna, for conveying the communication signals in the first signal path in the communication device via the first antenna; and
a second feed point, operatively connected to the second antenna, for conveying the communication signals in the second signal path in the communication device via the
15 second antenna so that the communication signals in the partially overlapped frequency bands are conveyed via different antennas.
2. The transceiver front-end of claim 1, wherein
the first frequency band substantially covers a frequency range of 1930 MHz to
20 1990 MHz, and
the second frequency band substantially covers a frequency range of 1920 MHz to 1980 MHz.
3. The transceiver front-end of claim 1, wherein
25 the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz, and
the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz.
- 30 4. The transceiver front-end of claim 3, further comprising
a first module, operatively connected to the first feed point, for disposing the first signal path for transmitting the communication signals, and

a second module, operatively connected to the second feed point, for disposing the second signal path for receiving the communication signals.

5 5. The transceiver front-end of claim 4, wherein the second module further comprises a third signal path for reception in a third frequency band different from the second frequency band.

10 6. The transceiver front-end of claim 5, wherein the third frequency band substantially covers a frequency range between 2110 MHz and 2170 MHz.

7. The transceiver front-end of claim 6, wherein the communication signals in the first and second frequency bands are transmitted in a GSM mode, and the communication signals in the third frequency band are transmitted in a W-CDMA mode.

15 8. The transceiver front-end of claim 7, wherein the second module further comprises a fourth signal path for transmission substantially in a frequency range of 1920 MHz to 1980 MHz in a W-CDMA mode.

20 9. The transceiver front-end of claim 8, wherein the first module further comprises a fifth signal path for reception substantially in a frequency range of 1930 MHz to 1990 MHz.

25 10. The transceiver front-end of claim 1, wherein the first frequency band substantially covers a first frequency range of 1710 MHz to 1785 MHz for transmission, and a second frequency range of 1850 MHz to 1910 MHz for transmission, and the second frequency band substantially covers a third frequency range of 1805 MHz to 1880 MHz for reception.

30 11. The transceiver front-end of claim 10, wherein the first signal path comprises:
a first end;
a second end operatively connected to the first feed point;
a first passband filter disposed between the first end and the second end for filtering the communication signals in the first frequency range;

a second passband filter disposed in parallel to the first passband filter between the first end and the second end for filtering the communication signals in the second frequency range;

- a first matching means operatively connected to the first end; and
5 a second matching means operatively connected to the second end.

12. The transceiver front-end of claim 10, wherein the first feed point is also connected to a third signal path for receiving communication signals substantially in a frequency range of 1930 MHz to 1990 MHz.

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13. The transceiver front-end of claim 12, wherein a switching circuit operatively connected to first feed point for providing a switching function between the first signal path and the third signal path.

- 15 14. The transceiver front-end of claim 13, wherein the switching means comprises a first PIN diode connected in series to the first signal path, a second PIN diode connected to the third signal path in a shunt configuration, and a phase shifting means connected between the first and second PIN diodes.

- 20 15. The transceiver front-end of claim 13, wherein the switching means comprises: a first solid state switch connected in series to the first signal path, and a second solid state switch connected in series to the third signal path.

- 25 16. The transceiver front-end of claim 12, wherein the communications signals received in the third signal path are transmitted in a GSM mode.

17. The transceiver front-end of claim 16, wherein the first feed point is further connected to signal paths for transmission and reception of communication signals in a GSM mode operating in a frequency range lower than 1000 MHz.

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18. The transceiver front-end of claim 1, wherein
the first frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for transmitting the communication signals, and

the second frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for receiving the communication signals, and wherein

the second feed point is also connected to a third signal path for reception of communication signals substantially in a frequency range of 1930 - 1990 MHz.

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19. The transceiver front-end of claim 1, wherein

the first frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for transmitting the communication signals, and

the second frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for receiving the communication signals, and wherein

the first feed point is also connected to a third signal path for transmission of communication signals substantially in a frequency range of the 1920 MHz – 1980 MHz.

20. The transceiver front-end of claim 18, wherein the first feed point is also connected to a fourth signal path for transmission of communication signals substantially in a frequency range of the 1920 MHz – 1980 MHz.

21. The transceiver front-end of claim 20, wherein the first frequency band also covers a further frequency range substantially between 1710 MHz to 1785 MHz.

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22. The transceiver front-end of claim 21, wherein the second feed point is also connected to a fifth signal path for reception of communication signals in a frequency range substantially between 2110 MHz and 2170 MHz.

23. The transceiver front-end of claim 22, wherein the first feed point is also connected to further signal paths for transmission and reception of communication signals in a GSM mode operating in a frequency range lower than 1000MHz.

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24. The transceiver front-end of claim 22, wherein the portable communication device further comprises a third antenna, said transceiver front-end further comprising a third module having a third feed point operatively connected to the third antenna, the third feed point electrically separated from the first and second feed point, wherein the third module further comprises

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at least one further signal path for receiving a communication signal substantially in one of the frequency ranges: (1805 - 1880 MHz), (1930 - 1990 MHz), and (2110 - 2170 MHz).

- 5 25. A method for reducing reception loss in a portable communication device, the communication device having
- a first antenna,
 - a second antenna electrically separated from the first antenna, and
 - a transceiver front-end for conveying communication signals in the communication
- 10 device, wherein the transceiver front-end comprises:
- a first feed point, operatively connected to the first antenna,
 - a second feed point, operatively connected to the second antenna, and
 - a plurality of signal paths, including at least a first signal path for conveying a
- 15 communication signal in a first frequency band, and a second signal path for conveying a communication signal in a second frequency band, which is at least partially overlapping with the first frequency band, said method comprising the steps of:
- operatively connecting the first signal path to the first feed point, and
 - operatively connecting the second signal path to the second feed point, so that the
- 20 communication signals in the partially overlapped frequency bands are conveyed via different antennas.
26. The method of claim 25, wherein the first frequency band substantially covers a frequency range of 1930 MHz to 1990 MHz, and the second frequency band substantially covers a frequency range of 1920 MHz to 1980 MHz.
- 25 27. The method of claim 25, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz.
- 30 28. The method of claim 25, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for transmission of the communication signals, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for reception of the communication signals, and wherein the reception

is also carried out in a third signal path in a frequency range substantially between 2110 MHz and 2170 MHz, said method further comprising the step of:

operatively connecting the third signal path to the second feed point.

5 29. The method of claim 28, wherein the transmission is also carried out in a fourth signal path in a frequency range substantially between 1930 MHz and 1990 MHz, said method further comprising the step of:

operatively connecting the fourth signal path to the first feed point.

10 30. The method of claim 25, wherein the first frequency band substantially covers a frequency range of 1850 MHz to 1910 MHz for transmission of the communication signals, and the second frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz for reception of the communication signals, and wherein the reception is also carried out in a third signal path in a frequency range substantially between 2110
15 MHz and 2170 MHz, said method further comprising the step of:

operatively connecting the third signal path to the first feed point.

31. The method of claim 30, wherein the transmission is also carried out in a fourth signal path in a frequency range substantially between 1930 MHz and 1990 MHz, said
20 method further comprising the step of:

operatively connecting the fourth signal path to the second feed point.

32. A portable communication device, comprising:

a first RF antenna;

25 a second RF antenna electrically separated from the first antenna; and

a transceiver front-end having a plurality of signal paths for conveying

communication signals in the communication device, including at least a first signal path for conveying a communication signal in a first frequency band, and a second signal path for conveying a communication signal in a second frequency band, which is at least

30 partially overlapped with the first frequency band, wherein the front-end further comprises:

a first feed point, operatively connected to the first antenna, for conveying the communication signals in the first signal path in the communication device via the first antenna; and

a second feed point, operatively connected to the second antenna, for conveying
5 the communication signals in the second signal path in the communication device via the second antenna so that the communication signals in the partially overlapped frequency bands are conveyed via different antennas.

33. The communication device of claim 32, wherein the front-end further comprises
10 a first module, operatively connected to the first feed point, for disposing the first signal path, and

a second module, operatively connected to the second feed point, for disposing the second signal path.

34. The communication device of claim 32, wherein
15 the first frequency band substantially covers a frequency range of 1920 MHz to 1980 MHz, and
the second frequency band substantially covers a frequency range of 1930 MHz to 1990 MHz.

35. The communication device of claim 32, wherein
20 the first frequency band substantially covers a frequency range of 1805 MHz to 1880 MHz, and
the second frequency band substantially covers a frequency range of 1850 MHz to
25 1910 MHz.

36. The communication device of claim 32, comprising a mobile phone.

37. The communication device of claim 32, comprising a communicator device.